

BAND GAP REFERENCE VOLTAGE CIRCUIT

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Abstract

PURPOSE: To make the temperature characteristic of an output reference voltage from a band gap reference voltage circuit flat by connecting a resistor in parallel with a diode in a band gap current generating circuit.

CONSTITUTION: The band gap reference voltage circuit is constituted so as to generate an output reference voltage to an output terminal 2 in accordance with a constant current obtained from a constant current source 1. The output voltage of the output terminal 2 is expressed by the sum of a voltage V_{BE3} between the base and emitter of a transistor (TR) 3 and a voltage between both the ends of a resistor R_4 and $V = V_{BE3} + (R_4/R_3)(kT/q)\ln(I_1/I_2)$ is formed, and when a current is selected so that the 2nd term is positive and $I_1 > I_2$ is formed because the V_{BE3} has a negative temperature factor, the whole temperature coefficient can be made equal to zero. In this case, the prescribed resistor may be connected in parallel with the diode 13 in order to make the temperature characteristic of the output reference voltage flat.

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